

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information				
Building number, street name			Unit no.	Lot/con.
Municipality BRAMPTON	Postal code	Plan number/ other description		
B. Individual who reviews and takes responsibility for design activities				
Name MICHAEL O'ROURKE		Firm HVAC DESIGNS LTD		
Street address 375 FINLEY AVE		Unit no. 202	Lot/con. N/A	
Municipality AJAX	Postal code L1S 2E2	Province ONTARIO	E-mail info@hvacdsgns.ca	
Telephone number (905) 619-2300	Fax number (905) 619-2375	Cell number ()		
C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1 OF Division C]				
☐ House ☐ Small Buildings ☐ Large Buildings ☐ Complex Buildings				
☒ HVAC – House ☐ Building Services ☐ Detection, Lighting and Power ☐ Fire Protection				
☐ Building Structural ☐ Plumbing – House ☐ Plumbing – All Buildings ☐ On-site Sewage Systems				
Description of designer's work HEAT LOSS / GAIN CALCULATIONS DUCT SIZING RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY RESIDENTIAL SYSTEM DESIGN per CSA-F280-12		Model: 2505-CNR OPT 2ND Project: SUMMER RIDGE ESTATES		
D. Declaration of Designer				
I, <u>MICHAEL O'ROURKE</u> declare that (choose one as appropriate): (print name)				
☐ I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4. of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories. Individual BCIN: _____ Firm BCIN: _____				
☒ I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5. of Division C, of the Building Code. Individual BCIN: <u>19669</u> Basis for exemption from registration and qualification: <u>O.B.C SENTENCE 3.2.4.1 (4)</u>				
☐ The design work is exempt from the registration and qualification requirements of the Building Code. Basis for exemption from registration and qualification: _____				
I certify that:				
1. The information contained in this schedule is true to the best of my knowledge.				
2. I have submitted this application with the knowledge and consent of the firm.				
June 11, 2024				
Date		Signature of Designer		

NOTE:

- For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) d) of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
- Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of authorization, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Application for a Permit Construct or Demolish – Effective January 1, 2015

SITE NAME: SUMMER RIDGE ESTATES										OPT 2ND					DATE: Jun-24					WINTER NATURAL AIR CHANGE RATE 0.298					HEAT LOSS ΔT °F. 74					CSA-F280-12									
BUILDER: ROYAL PINE HOMES										TYPE: 2505-CNR					GFA: 2384					LO# 105282					SUMMER NATURAL AIR CHANGE RATE 0.097					HEAT GAIN ΔT °F. 11					PERFORMANCE				
ROOM USE			MBR			ENS			BED-2			BED-3			BED-4			BATH																					
EXP. WALL			32			20			20			34			28			6																					
CLG. HT.			9			9			9			10			9			9																					
FACTORS																																							
GRS.WALL AREA			LOSS			GAIN			288			180			180			340			252			54															
GLAZING									LOSS			GAIN			LOSS			GAIN			LOSS			GAIN			LOSS			GAIN									
NORTH			20.8	12.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
EAST			20.8	32.9	0	0	0	0	0	0	0	0	48	997	1580	35	727	1152	0	0	0	0	0	0	0	0	0	0	0	0									
SOUTH			20.8	19.8	0	0	0	0	26	540	516	56	1163	1110	48	997	952	0	0	0	0	0	0	0	0	0	0	0	0	0									
WEST			20.8	32.9	26	540	856	12	249	395		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
SKYLT.			34.1	132.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
DOORS			19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
NET EXPOSED WALL			3.5	0.5	262	908	135	142	492	73		124	430	64	244	846	125	217	752	112	54	187	28																
NET EXPOSED BSMT WALL ABOVE GR			3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
EXPOSED CLG			1.3	0.6	343	430	191	118	148	66		155	194	86	205	257	114	202	253	113	92	115	51																
NO ATTIC EXPOSED CLG			2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0									
EXPOSED FLOOR			2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	175	436	65	75	187	28																
BASEMENT/CRAWL HEAT LOSS						0			0			0			0			0			0			0			0			0			0						
SLAB ON GRADE HEAT LOSS						0			0			0			0			0			0			0			0			0			0						
SUBTOTAL HT LOSS						1878			1430			1788			3097			2168			489																		
SUB TOTAL HT GAIN						1182			1049			1260			2771			1441			107																		
LEVEL FACTOR / MULTIPLIER			0.20	0.22				0.20	0.22				0.20	0.22				0.20	0.22																				
AIR CHANGE HEAT LOSS						411			313			391			678			474			107																		
AIR CHANGE HEAT GAIN						58			52			62			136			71			5																		
DUCT LOSS						0			0			0			0			264			60																		
DUCT GAIN						0			0			0			0			209			45																		
HEAT GAIN PEOPLE			240		2	480	0	0	0		1	240	1	240	1	240	1	240	0	0																			
HEAT GAIN APPLIANCES/LIGHTS						339			339			339			339			339			339																		
TOTAL HT LOSS BTU/H						2289			1742			2179			3775			2907			656																		
TOTAL HT GAIN x 1.3 BTU/H						2677			1872			2472			4533			2990			645																		

ROOM USE					FAM		KT/BR		LV/DN		ENS-2		W/R		FOY		MUD								LOD		BAS				
EXP. WALL					30		36		46		10		6		14		11								37		156				
CLG. HT.					10		10		10		9		10		10		11								9		9				
GRS.WALL AREA	LOSS	GAIN			300		360		460		90		60		140		121								333		1047				
GLAZING			LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN	LOSS	GAIN			
NORTH	20.8	12.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	166	103					0	0	0	0	0	0		
EAST	20.8	32.9	0	0	0	0	0	0	57	1176	1862	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SOUTH	20.8	19.8	0	0	0	57	1184	1130	46	961	917	24	499	476	0	0	0	24	499	476	0	0	0	0	0	0	7	145	139		
WEST	20.8	32.9	38	789	1251	47	976	1547	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
SKYLT.	34.1	132.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
DOORS	19.6	2.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	411	61	20	392	58			0	0	0	20	392	58	
NET EXPOSED WALL	3.5	0.5	262	908	135	256	888	132	357	1238	184	66	229	34	60	208	31	95	329	49	93	322	48			0	0	0	0	0	0
NET EXPOSED BSMT WALL ABOVE GR	3.5	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			207	727	108	357	1254	186
EXPOSED CLG	1.3	0.6	0	0	0	0	0	0	0	0	0	90	113	50	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
NO ATTIC EXPOSED CLG	2.7	1.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
EXPOSED FLOOR	2.5	0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0
BASEMENT/CRAWL HEAT LOSS			0		0		0		0		0		0		0		0		0		0						5274				
SLAB ON GRADE HEAT LOSS			0		0		0		0		0		0		0		0		0		0				0						
SUBTOTAL HT LOSS			1698		3048		3375		840		208		1239		880		1039		7066		383										
SUB TOTAL HT GAIN			1385		2809		2963		560		31		586		208		601		383												
LEVEL FACTOR / MULTIPLIER			0.30	0.37	0.30	0.37	0.30	0.37	0.20	0.22	0.30	0.37	0.30	0.37	0.30	0.37	0.30	0.37	0.50	0.79											
AIR CHANGE HEAT LOSS			623		1119		1239		184		76		455		323		6394		48												
AIR CHANGE HEAT GAIN			68		138		146		28		2		29		10		48														
DUCT LOSS			0		0		0		0		0		0		0		0														
DUCT GAIN			0		0		0		0		0		0		0		0														
HEAT GAIN PEOPLE	240		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	0	0	0	
HEAT GAIN APPLIANCES/LIGHTS			339		339		339		339		339		339		339		339		339		339										
TOTAL HT LOSS BTU/H			2321		4168		4614		1024		284		1694		1203		1039		13459		1002										
TOTAL HT GAIN x 1.3 BTU/H			2331		4272		4482		764		483		1240		725		782														

SITE NAME: SUMMER RIDGE ESTATES
BUILDER: ROYAL PINE HOMES

OPT 2ND
TYPE: 2505-CNR

DATE: Jun-24

GFA: 2384 LO# 105282

HEATING CFM 975 COOLING CFM 975
TOTAL HEAT LOSS 43,355 TOTAL HEAT GAIN 31,270
AIR FLOW RATE CFM 22.49 AIR FLOW RATE CFM 31.18

furnace pressure 0.6
furnace filter 0.00
a/c coil pressure 0.21
available pressure for s/a & r/a 0.39

FACTORY INSTALLED

59SC6A060M17--16 CARRIER

AFUE = 97 %
INPUT (BTU/H) = 60,000
OUTPUT (BTU/H) = 58,000

RUN COUNT	4th	3rd	2nd	1st	Bas
S/A	0	0	10	9	4
R/A	0	0	5	2	1

All S/A diffusers 4"x10" unless noted otherwise on layout.

All S/A runs 5"Ø unless noted otherwise on layout.

plenium pressure s/a 0.20 r/a pressure 0.19
max s/a dif press. loss 0.02 r/a grille press. Loss 0.02
min adjusted pressure s/a 0.18 adjusted pressure r/a 0.17

FAN SPEED 60
LOW 0
MEDLOW 790
MEDIUM 975
MEDIUM HIGH 1140
HIGH 1300

DESIGN CFM = 975
CFM @ .6" E.S.P.

TEMPERATURE RISE 55 °F

RUN #	1	2	3	4	5	6	7	8	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
ROOM NAME	MBR	ENS	BED-3	BED-2	BED-3	BED-4	BATH	BED-4	MBR	LV/DN	FAM	FAM	KT/BR	KT/BR	LV/DN	ENS-2	W/R	FOY	MUD	BAS	BAS	BAS	BAS
RM LOSS MBH.	1.14	1.74	1.89	2.18	1.89	1.45	0.66	1.45	1.14	2.31	1.16	1.16	2.08	2.08	2.31	1.02	0.28	1.69	1.20	3.62	3.62	3.62	3.62
CFM PER RUN HEAT	26	39	42	49	42	33	15	33	26	52	26	26	47	47	52	23	6	38	27	82	82	82	82
RM GAIN MBH.	1.34	1.87	2.27	2.47	2.27	1.49	0.65	1.49	1.34	2.24	1.17	1.17	2.14	2.14	2.24	0.76	0.48	1.24	0.73	0.45	0.45	0.45	0.45
CFM PER RUN COOLING	42	58	71	77	71	47	20	47	42	70	36	36	67	67	70	24	15	39	23	14	14	14	14
ADJUSTED PRESSURE	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.18	0.18	0.18	0.18
ACTUAL DUCT LGH.	37	42	59	43	59	54	36	50	42	54	23	13	30	33	50	54	14	34	21	27	11	23	47
EQUIVALENT LENGTH	160	210	200	180	220	140	130	120	150	110	120	100	130	130	110	180	180	180	120	140	130	140	120
TOTAL EFFECTIVE LENGTH	197	252	259	223	279	194	166	170	192	164	143	113	160	163	160	234	194	214	141	167	141	163	167
ADJUSTED PRESSURE	0.1	0.08	0.07	0.09	0.07	0.1	0.12	0.11	0.1	0.12	0.13	0.17	0.12	0.12	0.12	0.08	0.1	0.09	0.14	0.11	0.13	0.11	0.11
ROUND DUCT SIZE	4	6	6	6	6	5	4	4	4	6	4	4	6	6	6	4	4	4	4	6	6	6	6
HEATING VELOCITY (ft/min)	298	199	214	250	214	242	172	379	298	265	298	298	240	240	265	264	69	436	310	418	418	418	418
COOLING VELOCITY (ft/min)	482	296	362	393	362	345	229	539	482	357	413	413	342	342	357	275	172	447	264	71	71	71	71
OUTLET GRILL SIZE	3X10	4X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	3X10	3X10	4X10	4X10	4X10	3X10	3X10	3X10	3X10	4X10	4X10	4X10	4X10
TRUNK	A	C	B	C	B	C	C	C	A	B	A	A	A	A	B	B	C	B	C	A	A	C	B

RUN #	ROOM NAME	RM LOSS MBH.	CFM PER RUN HEAT	RM GAIN MBH.	CFM PER RUN COOLING	ADJUSTED PRESSURE	ACTUAL DUCT LGH.	EQUIVALENT LENGTH	TOTAL EFFECTIVE LENGTH	ADJUSTED PRESSURE	ROUND DUCT SIZE	HEATING VELOCITY (ft/min)	COOLING VELOCITY (ft/min)	OUTLET GRILL SIZE	TRUNK
1	MBR	1.14	26	1.34	42	0.19	37	160	197	0.1	4	298	482	3X10	A
2	ENS	1.74	39	1.87	58	0.19	42	210	252	0.08	6	199	296	4X10	C
3	BED-3	1.89	42	2.27	71	0.19	59	200	259	0.07	6	214	362	4X10	B
4	BED-2	2.18	49	2.47	77	0.19	43	180	223	0.09	6	250	393	4X10	C
5	BED-3	1.89	42	2.27	71	0.19	59	220	279	0.07	6	214	362	4X10	B
6	BED-4	1.45	33	1.49	47	0.19	54	140	194	0.1	5	242	345	3X10	C
7	BATH	0.66	15	0.65	20	0.19	36	130	166	0.12	4	172	229	3X10	C
8	BED-4	1.45	33	1.49	47	0.19	50	120	170	0.11	4	379	539	3X10	C
10	MBR	1.14	26	1.34	42	0.19	42	150	192	0.1	4	298	482	3X10	A
11	LV/DN	2.31	52	2.24	70	0.19	54	110	164	0.12	6	265	357	4X10	B
12	FAM	1.16	26	1.17	36	0.19	23	120	143	0.13	4	298	413	3X10	A
13	FAM	1.16	26	1.17	36	0.19	13	100	113	0.17	4	298	413	3X10	A
14	KT/BR	2.08	47	2.14	67	0.19	30	130	160	0.12	6	240	342	4X10	A
15	KT/BR	2.08	47	2.14	67	0.19	33	110	163	0.12	6	240	342	4X10	A
16	LV/DN	2.31	52	2.24	70	0.19	50	110	160	0.12	6	265	357	4X10	B
17	ENS-2	1.02	23	0.76	24	0.19	54	180	234	0.08	4	264	275	3X10	B
18	W/R	0.28	6	0.48	15	0.19	14	180	194	0.1	4	69	172	3X10	C
19	FOY	1.69	38	1.24	39	0.19	34	180	214	0.09	4	436	447	3X10	B
20	MUD	1.20	27	0.73	23	0.19	21	140	141	0.14	4	310	264	3X10	C
21	BAS	3.62	82	0.45	14	0.18	27	130	167	0.11	6	418	71	4X10	A
22	BAS	3.62	82	0.45	14	0.18	11	140	141	0.13	6	418	71	4X10	A
23	BAS	3.62	82	0.45	14	0.18	23	140	163	0.11	6	418	71	4X10	C
24	BAS	3.62	82	0.45	14	0.18	47	120	167	0.11	6	418	71	4X10	B

SUPPLY AIR TRUNK SIZE															RETURN AIR TRUNK SIZE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	TRUNK	STATIC	ROUND	RECT						TRUNK	STATIC	ROUND	RECT						TRUNK	STATIC	ROUND	RECT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	CFM	PRESS.	DUCT	DUCT						CFM	PRESS.	DUCT	DUCT						CFM	PRESS.	DUCT	DUCT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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RETURN AIR #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
FLOOR	2	2	2	2	2	1	1																	
AIR VOLUME	81	85	85	85	85	310	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PLENUM PRESSURE	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
ACTUAL DUCT LGH.	55	68	58	63	53	19	47	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
EQUIVALENT LENGTH	215	225	255	260	205	135	210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL EFFECTIVE LH	270	293	313	323	258	154	257	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
ADJUSTED PRESSURE	0.06	0.06	0.05	0.05	0.06	0.11	0.07	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72	16.72
ROUND DUCT SIZE	5.9	6	6	6	6	8.3	5.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
INLET GRILL SIZE	8	8	8	8	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
INLET GRILL SIZE	14	14	14	14	14	24	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

TYPE: 2505-CNR
SITE NAME: SUMMER RIDGE ESTATES

LO # 105282
OPT 2ND

RESIDENTIAL MECHANICAL VENTILATION DESIGN SUMMARY

COMBUSTION APPLIANCES		9.32.3.1(1)
a)	☒ Direct vent (sealed combustion) only	
b)	☐ Positive venting induced draft (except fireplaces)	
c)	☐ Natural draft, B-vent or induced draft gas fireplace	
d)	☐ Solid Fuel (including fireplaces)	
e)	☐ No Combustion Appliances	

HEATING SYSTEM	
☒ Forced Air	☐ Non Forced Air
☐ Electric Space Heat	

HOUSE TYPE		9.32.1(2)
☒ I	Type a) or b) appliance only, no solid fuel	
☐ II	Type I except with solid fuel (including fireplaces)	
☐ III	Any Type c) appliance	
☐ IV	Type I, or II with electric space heat	
☐	Other: Type I, II or IV no forced air	

SYSTEM DESIGN OPTIONS		O.N.H.W.P.
☐ 1	Exhaust only/Forced Air System	
☐ 2	HRV with Ducting/Forced Air System	
☒ 3	HRV Simplified/connected to forced air system	
☐ 4	HRV with Ducting/non forced air system	
☐	Part 6 Design	

TOTAL VENTILATION CAPACITY		9.32.3.3(1)
Basement + Master Bedroom	<u>2</u> @ 21.2 cfm	<u>42.4</u> cfm
Other Bedrooms	<u>3</u> @ 10.6 cfm	<u>31.8</u> cfm
Kitchen & Bathrooms	<u>5</u> @ 10.6 cfm	<u>53</u> cfm
Other Rooms	<u>4</u> @ 10.6 cfm	<u>42.4</u> cfm
Table 9.32.3.A.	TOTAL	<u>169.6</u> cfm

PRINCIPAL VENTILATION CAPACITY REQUIRED		9.32.3.4.(1)
1 Bedroom	31.8	cfm
2 Bedroom	47.7	cfm
3 Bedroom	63.6	cfm
4 Bedroom	79.5	cfm
5 Bedroom	95.4	cfm
TOTAL		<u>79.5</u> cfm

SUPPLEMENTAL VENTILATION CAPACITY		9.32.3.5.
Total Ventilation Capacity	<u>169.6</u>	cfm
Less Principal Ventil. Capacity	<u>79.5</u>	cfm
Required Supplemental Capacity	<u>90.1</u>	cfm

PRINCIPAL EXHAUST FAN CAPACITY	
Model: VANEE V150H	Location: BSMT
<u>79.5</u> cfm	☒ HVI Approved

PRINCIPAL EXHAUST HEAT LOSS CALCULATION				
CFM	ΔT °F	FACTOR	% LOSS	
79.5 CFM	X 74 F	X 1.08	X	0.25

SUPPLEMENTAL FANS		BY INSTALLING CONTRACTOR		
Location	Model	cfm	HVI	Sones
ENS	BY INSTALLING CONTRACTOR	50	☒	3.5
BATH	BY INSTALLING CONTRACTOR	50	☒	3.5
W/R	BY INSTALLING CONTRACTOR	50	☒	3.5

HEAT RECOVERY VENTILATOR		9.32.3.11.
Model: VANEE V150H		
<u>150</u> cfm high	<u>35</u> cfm low	
<u>75</u> % Sensible Efficiency	☒ HVI Approved	
@ 32 deg F (0 deg C)		

LOCATION OF INSTALLATION	
Lot:	Concession
Township	Plan:
Address	
Roll #	Building Permit #

BUILDER:	
ROYAL PINE HOMES	
Name:	
Address:	
City:	
Telephone #:	Fax #:

INSTALLING CONTRACTOR	
Name:	
Address:	
City:	
Telephone #:	Fax #:

DESIGNER CERTIFICATION	
I hereby certify that this ventilation system has been designed in accordance with the Ontario Building Code.	
Name:	HVAC Designs Ltd.
Signature:	<i>Michael O'Rourke</i>
HRAI #	001820
Date:	June-24

I REVIEW AND TAKE RESPONSIBILITY FOR THE DESIGN WORK AND AM QUALIFIED IN THE APPROPRIATE CATEGORY AS AN "OTHER DESIGNER" UNDER DIVISION C, 3.2.5 OF THE BUILDING CODE.
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE

CSA F280-12 Residential Heat Loss and Heat Gain Calculations																																																													
Formula Sheet (For Air Leakage / Ventilation Calculation)																																																													
LO#: 105282		Model: 2505-CNR		Builder: ROYAL PINE HOMES																																																									
				Date: 6/11/2024																																																									
Volume Calculation			Air Change & Delta T Data																																																										
House Volume <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Level</th> <th>Floor Area (ft²)</th> <th>Floor Height (ft)</th> <th>Volume (ft³)</th> </tr> </thead> <tbody> <tr> <td>Bsmt</td> <td>1090</td> <td>9</td> <td>9810</td> </tr> <tr> <td>First</td> <td>1090</td> <td>10</td> <td>10900</td> </tr> <tr> <td>Second</td> <td>1294</td> <td>9</td> <td>11646</td> </tr> <tr> <td>Third</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td>Fourth</td> <td>0</td> <td>9</td> <td>0</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>32,356.0 ft³</td> </tr> <tr> <td colspan="2" style="text-align: right;">Total:</td> <td></td> <td>916.2 m³</td> </tr> </tbody> </table>			Level	Floor Area (ft²)	Floor Height (ft)	Volume (ft³)	Bsmt	1090	9	9810	First	1090	10	10900	Second	1294	9	11646	Third	0	9	0	Fourth	0	9	0	Total:			32,356.0 ft³	Total:			916.2 m³	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">WINTER NATURAL AIR CHANGE RATE</td> <td style="width: 20%;">0.298</td> </tr> <tr> <td>SUMMER NATURAL AIR CHANGE RATE</td> <td>0.097</td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th colspan="5" style="text-align: center;">Design Temperature Difference</th> </tr> <tr> <th></th> <th>Tin °C</th> <th>Tout °C</th> <th>ΔT °C</th> <th>ΔT °F</th> </tr> <tr> <td>Winter DTDh</td> <td>22</td> <td>-19</td> <td>41</td> <td>74</td> </tr> <tr> <td>Summer DTDc</td> <td>24</td> <td>30</td> <td>6</td> <td>11</td> </tr> </table>			WINTER NATURAL AIR CHANGE RATE	0.298	SUMMER NATURAL AIR CHANGE RATE	0.097	Design Temperature Difference						Tin °C	Tout °C	ΔT °C	ΔT °F	Winter DTDh	22	-19	41	74	Summer DTDc	24	30	6	11
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5.2.3.1 Heat Loss due to Air Leakage			6.2.6 Sensible Gain due to Air Leakage																																																										
$HL_{airb} = LR_{airh} \times \frac{V_b}{3.6} \times DTD_h \times 1.2$ 0.298 x 254.51 x 41 °C x 1.2 = 3748 W = 12788 Btu/h			$HG_{salb} = LR_{airc} \times \frac{V_b}{3.6} \times DTD_c \times 1.2$ = 0.097 x 254.51 x 6 °C x 1.2 = 181 W = 616 Btu/h																																																										
5.2.3.2 Heat Loss due to Mechanical Ventilation			6.2.7 Sensible heat Gain due to Ventilation																																																										
$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 74 °F x 1.08 x 0.25 = 1593 Btu/h			$HL_{vairb} = PVC \times DTD_h \times 1.08 \times (1 - E)$ 80 CFM x 11 °F x 1.08 x 0.25 = 236 Btu/h																																																										
5.2.3.3 Calculation of Air Change Heat Loss for Each Room (Floor Multiplier Section)																																																													
$HL_{airr} = Level\ Factor \times HL_{airbv} \times \{(HL_{agcr} + HL_{bgcr}) \div (HL_{agclevel} + HL_{bgclevel})\}$																																																													
Level	Level Factor (LF)	HLairve Air Leakage + Ventilation Heat Loss (Btu/h)	Level Conductive Heat Loss: (HL _{clevel})	Air Leakage Heat Loss Multiplier (LF x HLairbv / HL _{clevel})																																																									
1	0.5	12,788	8,104	0.789																																																									
2	0.3		10,448	0.367																																																									
3	0.2		11,691	0.219																																																									
4	0		0	0.000																																																									
5	0		0	0.000																																																									
*HLairbv = Air leakage heat loss + ventilation heat loss *For a balanced or supply only ventilation system HLairve = 0																																																													
				Michael O'Rourke BCIN# 19669 																																																									

HEAT LOSS AND GAIN SUMMARY SHEET

MODEL: 2505-CNR	OPT 2ND	BUILDER: ROYAL PINE HOMES
SFQT: 2384	LO# 105282	SITE: SUMMER RIDGE ESTATES

DESIGN ASSUMPTIONS

HEATING	°F	COOLING	°F
OUTDOOR DESIGN TEMP.	-2	OUTDOOR DESIGN TEMP.	86
INDOOR DESIGN TEMP.	72	INDOOR DESIGN TEMP. (MAX 75°F)	75
		WINDOW SHGC	0.60

BUILDING DATA

ATTACHMENT:	DETACHED	# OF STORIES (+BASEMENT):	3
FRONT FACES:	EAST	ASSUMED (Y/N):	Y
AIR CHANGES PER HOUR:	3.00	ASSUMED (Y/N):	Y
AIR TIGHTNESS CATEGORY:	TIGHT	ASSUMED (Y/N):	Y
WIND EXPOSURE:	SHELTERED	ASSUMED (Y/N):	Y
HOUSE VOLUME (ft ³):	32356.0	ASSUMED (Y/N):	Y
INTERNAL SHADING:	BLINDS/CURTAINS	ASSUMED OCCUPANTS:	5
INTERIOR LIGHTING LOAD (Btu/h/ft ²):	1.27	DC BRUSHLESS MOTOR (Y/N):	Y
FOUNDATION CONFIGURATION	BCIN_1	DEPTH BELOW GRADE:	6.0 ft
LENGTH: 51.0 ft	WIDTH: 27.0 ft	EXPOSED PERIMETER:	156.0 ft

2012 OBC - COMPLIANCE PACKAGE

Component	Compliance Package PERFORMANCE	
	Nominal	Min. Eff.
Ceiling with Attic Space Minimum RSI (R)-Value	60	59.22
Ceiling Without Attic Space Minimum RSI (R)-Value	31	27.65
Exposed Floor Minimum RSI (R)-Value	31	29.80
Walls Above Grade Minimum RSI (R)-Value	22+1.5	21.40
Basement Walls Minimum RSI (R)-Value	20	21.12
Below Grade Slab Entire surface > 600 mm below grade Minimum RSI (R)-Value	-	-
Edge of Below Grade Slab ≤ 600 mm Below Grade Minimum RSI (R)-Value	10	10
Heated Slab or Slab ≤ 600 mm below grade Minimum RSI (R)-Value	10	11.13
Windows and Sliding Glass Doors Maximum U-Value	1.6	-
Skylights Maximum U-Value	2.6	-
Space Heating Equipment Minimum AFUE	96%	-
HRV/ERV Minimum Efficiency	75%	-
Domestic Hot Water Heater Minimum EF	0.9	-

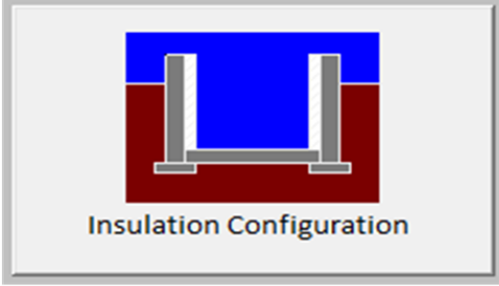
INDIVIDUAL BCIN: 19669

MICHAEL O'ROURKE



Residential Foundation Thermal Load Calculator

Supplemental tool for CAN/CSA-F280

Weather Station Description		
Province:	Ontario	
Region:	Brampton	
Site Description		
Soil Conductivity:	Normal conductivity: dry sand, loam, clay	
Water Table:	Normal (7-10 m, 23-33 ft)	
Foundation Dimensions		
Floor Length (m):	15.5	 Insulation Configuration
Floor Width (m):	8.2	
Exposed Perimeter (m):	0.0	
Wall Height (m):	2.7	
Depth Below Grade (m):	1.83	
Window Area (m ²):	2.0	
Door Area (m ²):	1.9	
Radiant Slab		
Heated Fraction of the Slab:	0	
Fluid Temperature (°C):	33	
Design Months		
Heating Month	1	
Foundation Loads		
Heating Load (Watts):		1545

TYPE: 2505-CNR
LO# 105282

OPT 2ND

Michael O'Rourke BCIN #19669



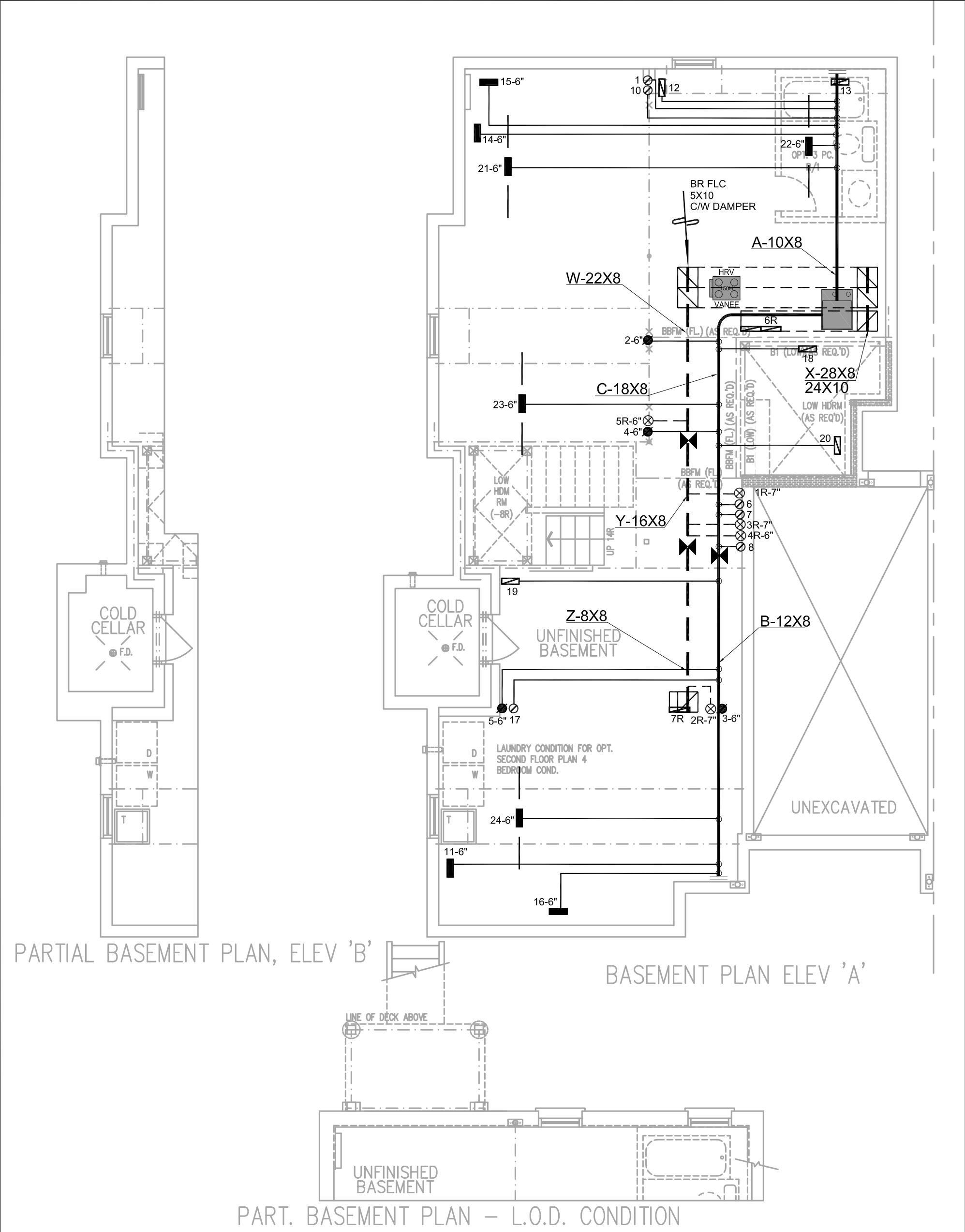
Air Infiltration Residential Load Calculator

Supplemental tool for CAN/CSA-F280

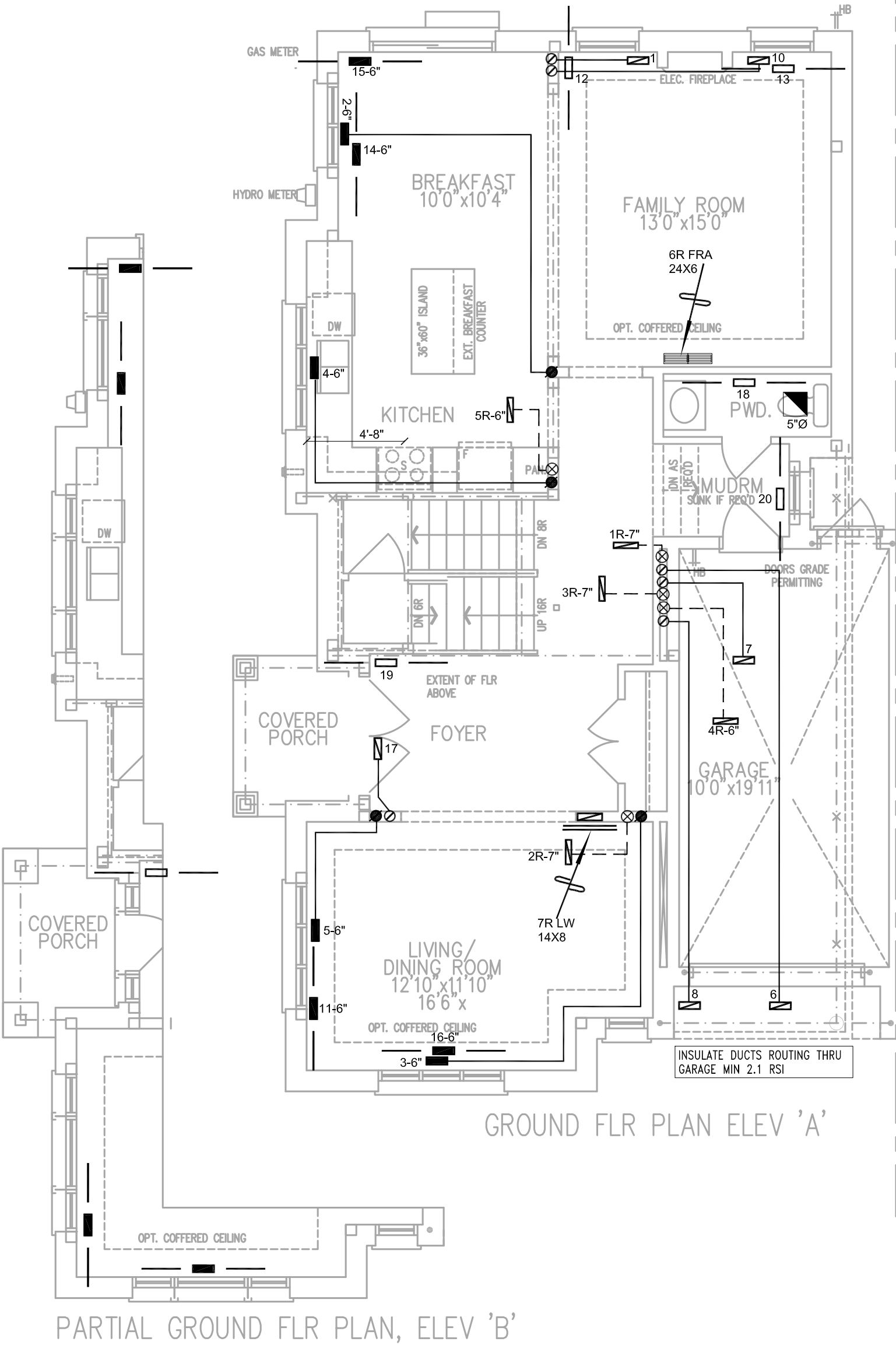
Weather Station Description				
Province:	Ontario			
Region:	Brampton			
Weather Station Location:	Open flat terrain, grass			
Anemometer height (m):	10			
Local Shielding				
Building Site:	Suburban, forest			
Walls:	Heavy			
Flue:	Heavy			
Highest Ceiling Height (m):	7.62			
Building Configuration				
Type:	Detached			
Number of Stories:	Two			
Foundation:	Full			
House Volume (m ³):	916.2			
Air Leakage/Ventilation				
Air Tightness Type:	Attached (3.0 ACH)			
Custom BDT Data:	ELA @ 10 Pa.	1026.3 cm ²		
	3.00	ACH @ 50 Pa		
Mechanical Ventilation (L/s):	Total Supply	Total Exhaust		
	37.5	37.5		
Flue Size				
Flue #:	#1	#2	#3	#4
Diameter (mm):	0	0	0	0
Natural Infiltration Rates				
Heating Air Leakage Rate (ACH/H):	0.298			
Cooling Air Leakage Rate (ACH/H):	0.097			

TYPE: 2505-CNR
LO# 105282

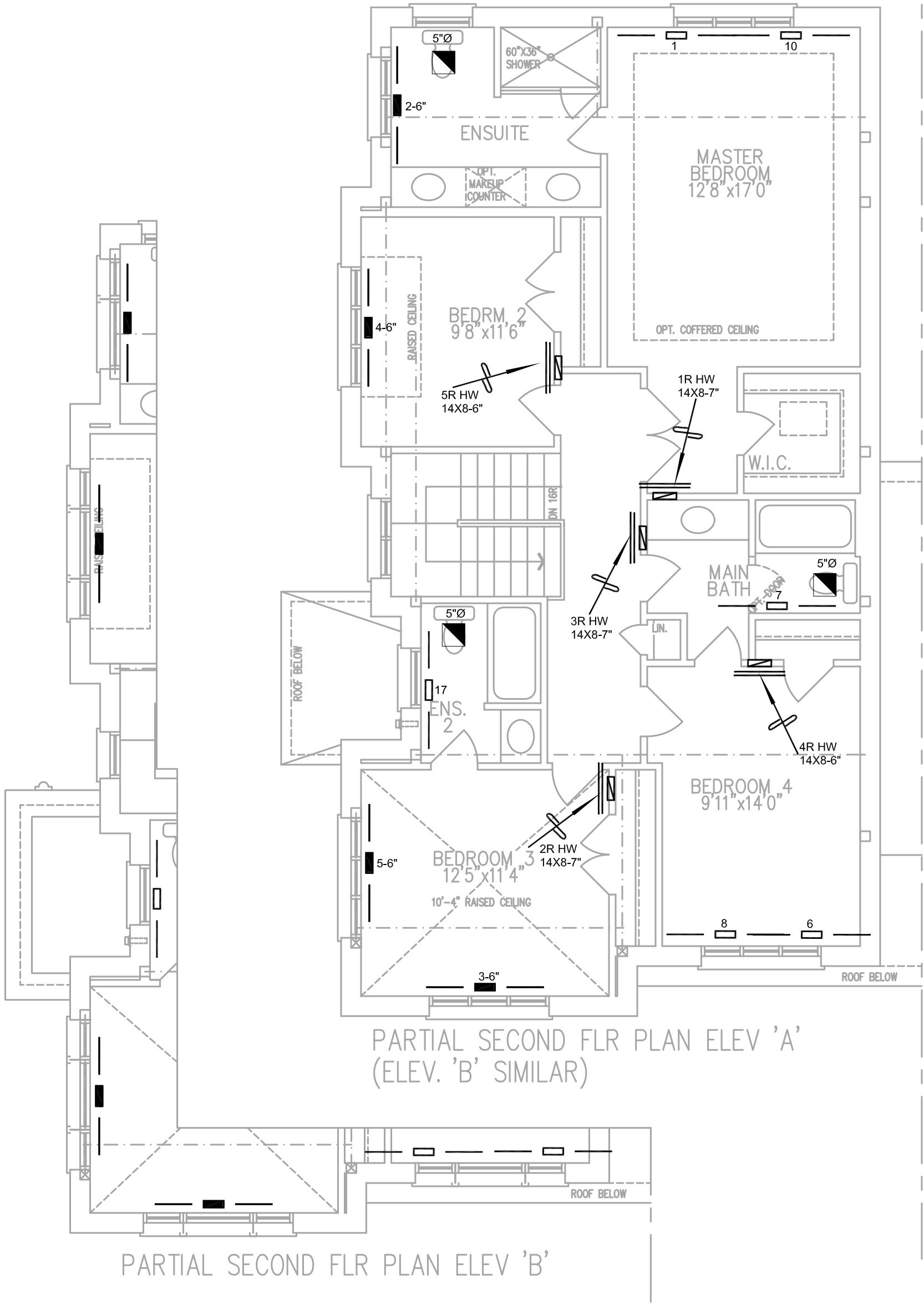
OPT 2ND



HVAC LEGEND								3.				
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.				
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.				
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	Description	Date		
	SUPPLY AIR BOOT ABOVE		6" SUPPLY AIR STACK 2nd FLOOR		FRA- FLOOR RETURN AIR GRILLE		REDUCER	REVISIONS				
ALL DRAWINGS, CALCULATIONS AND SPECIFICATIONS ARE THE PROPERTY OF HVAC DESIGNS LTD.© AND MAY NOT BE REPRODUCED, MODIFIED OR ALTERED WITHOUT EXPRESSED WRITTEN CONSENT. THE DRAWINGS ARE DATED AND USE OF THESE DRAWINGS AFTER ONE YEAR FROM THE DATED NOTED IS NOT AUTHORIZED. CONTRACTOR SHALL CHECK ALL CONDITIONS BEFORE PROCEEDING WITH WORK. LATEST MUNICIPAL APPROVED DRAWINGS ONLY TO BE USED DURING INSTALLATION OF HEATING SYSTEM. HVAC DESIGNS LTD. IS NOT LIABLE FOR ANY CLAIMS ARISING FROM UNAUTHORIZED USE OF THE DRAWINGS OR FROM ANY CHANGES TO ACCEPTED STANDARDS AND/OR THE ONTARIO BUILDING CODE.						I Michael O'Rourke have reviewed and take responsibility for the design work and am qualified under division C.3.2.5 of the building code.		 Michael O'Rourke BCIN # 19669 HVAC Designs Ltd.		SB-12 PERFORMANCE		
Client		HVACDESIGNS LTD. 375 Finley Ave. Suite 202 - Ajax, Ontario L1S 2E2 Tel. 905.619.2300 - 905.420.5300 Fax 905.619.2375 Email: info@hvacdesigns.ca Web: www.hvacdesigns.ca Specializing in Residential Mechanical Design Services Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.				HEAT LOSS 44948 BTU/H		# OF RUNS S/A R/A FANS		Sheet Title		
ROYAL PINE HOMES						UNIT DATA		3RD FLOOR		BASEMENT HEATING LAYOUT		
Project Name						CARRIER		2ND FLOOR		10	5	3
SUMMER RIDGE ESTATES						MODEL		1ST FLOOR		9	2	2
BRAMPTON, ONTARIO						59SC6A060M17--16		BASEMENT		4	1	0
Date						JUNE/2024		Scale		3/16" = 1'-0"		BCIN# 19669
OPT 2ND		2505-CNR		2384 sqft		LO#		105282				



HVAC LEGEND							3.		
SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	2.	
	SUPPLY AIR GRILLE		6" SUPPLY AIR BOOT ABOVE		14"x8" RETURN AIR GRILLE		RETURN AIR STACK ABOVE	1.	
	SUPPLY AIR GRILLE 6" BOOT		SUPPLY AIR STACK FROM 2nd FLOOR		30"x8" RETURN AIR GRILLE		RETURN AIR STACK 2nd FLOOR	No.	DescriptionDate
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Project Name		ROYAL PINE HOMES		SUMMER RIDGE ESTATES BRAMPTON, ONTARIO		Date		JUNE/2024	
OPT 2ND 2505-CNR		2384 sqft				Scale		3/16" = 1'-0"	
								BCIN# 19669	
								LO# 105282	



HVAC LEGEND							3.		
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Project Name						Sheet Title			
ROYAL PINE HOMES		SUMMER RIDGE ESTATES BRAMPTON, ONTARIO				SECOND FLOOR HEATING LAYOUT			
OPT 2ND 2505-CNR						Date JUNE/2024			
2384 sqft		Installation to comply with the latest Ontario Building Code. All supply branch outlets shall be equipped with a manual balancing damper. Ductwork which passes through the garage or unheated spaces shall be adequately insulated and be gas-proofed.				Scale 3/16" = 1'-0"			
						BCIN# 19669			
						LO#		105282	